CSC148 winter 2014

inheritance, Exceptions, special methods

week 3

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Outline

specialize software

raising exceptions

specialize flexibly

If we decided to extend the features of `Stack`, what's wrong with:

- modifying the existing `Stack`?
- cut-paste-modify `Stack` $\longrightarrow$ `MyStack`?
- include `Stack` attribute in new classes

class declaration

we subclass (extend) a superclass (base class) by:

- declaring that we're extending it...

  ```
  class NewClass(OldClass):
  ...
  ```

- add methods and attributes to specialize

- other methods and attributes are searched for in superclass

override versus extend

you may replace **or** modify old code

- subclass method with the same name replace superclass method
- access superclass method with `OldClass.method(self,...)`
- `__init__` is a special case — careful

richer communication

return types are not appropriate in all cases

- what's wrong with `IntStack` returning a "special" integer for pop-on-empty?
- push usually has return type None, but what if stuff happens?
- what if the calling code doesn't know what to do?

cause existing Exceptions:

- `int("seven")`
- `a = 1/0`
- `[1, 2][2]`

raise existing Exceptions:

- `raise ValueError` or...

- `raise ValueError("you can't do that!")`

roll your own Exceptions:

- ```
  class ExtremeException(Exception):
      pass
  ```

- ```
  raise ExtremeException
  ```

- ```
  raise ExtremeException('I really take exception
  to that!')
  ```
  ```

what makes two stack equivalent?

Tell Python with `__eq__`

Your `__eq__` should really be equivalent: symmetrical, reflexive, transitive

represent in a reproducible way

Tell Python how to represent your object with `__repr__`

Ideally, you should be able to cut-and-paste this representation to create an equivalent object